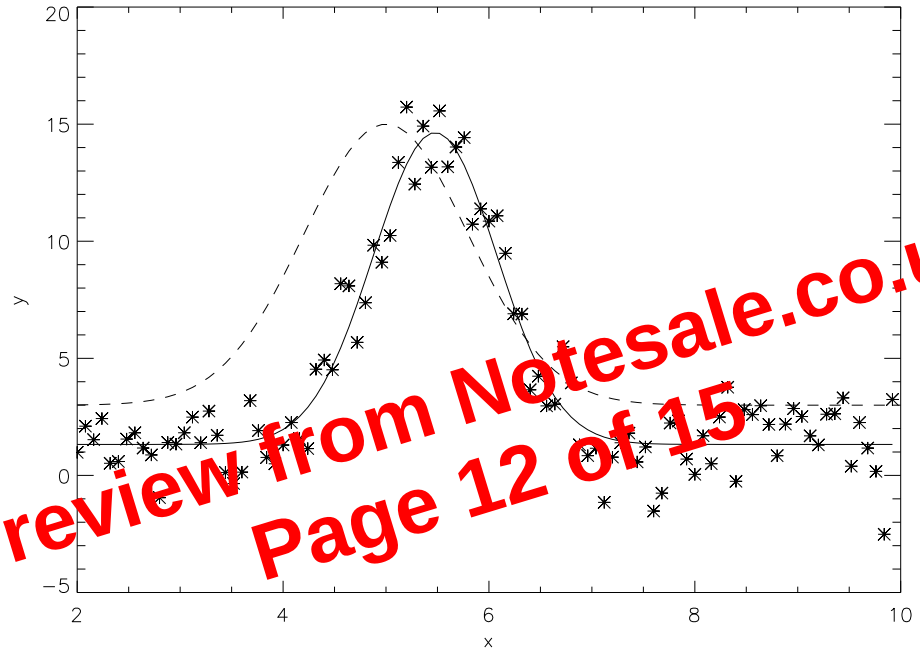

Figure 3: Final fit to the data show in figure 1, the derived parameters are given in table 6.

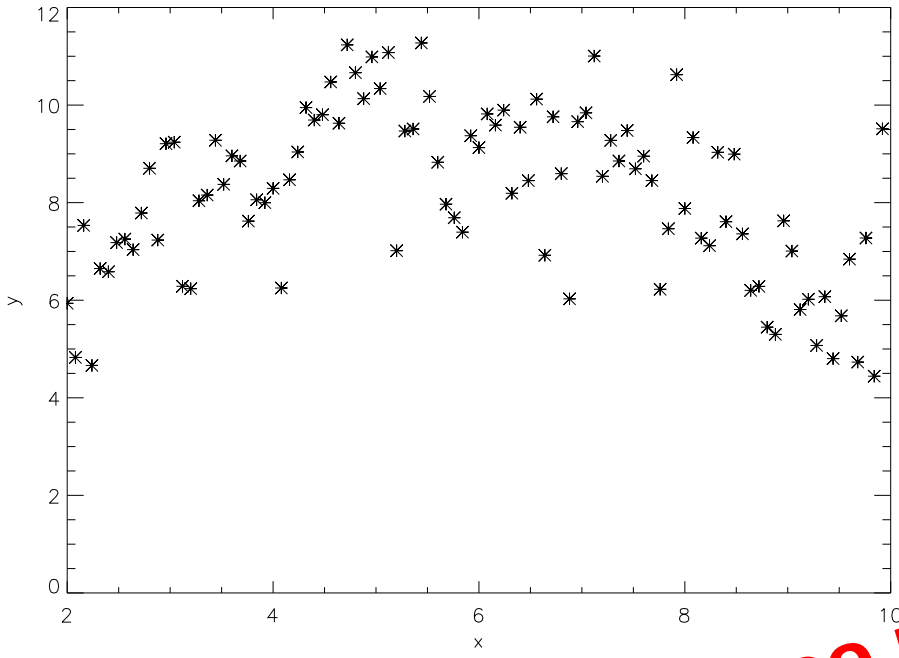

Figure 4: Experimental data which will be fitted with a Gaussian, these data define a Gaussian less well than the original data shown in figure 1.

The largest covariance is between the height and the position of the Gaussian. This covariance says that if you increase the position then you must also increase the height to satisfy the data. Again, looking at the data this looks reasonable, especially given the two outlying points just below $x = 7$.

There is a negative covariance between the width and the height of the Gaussian. This means that if the height is increased then the width must be decreased in order to satisfy the data. This also isn't unexpected. Similarly, if the background height is decreased then this can be compensated by for the width being increased.

The covariances in this fit are not particularly high, depending on the experiment, one should be aiming for (normalised) covariances below 0.6 before getting worried.

4.2 High covariances

Consider the same simple Gaussian model as given above, but this time applied to the data shown in figure 4.

Applying the same methodology as before, we can fit the same 4-parameter model to it, this fit is shown in figure 5. The parameters for this fit are given in